Space Weather Forecast

Issued on Thursday 13 March 2025 at 01:02 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate-class flares throughout. G1/Minor likely, Chance of G2/Moderate geomagnetic storms days 1, 2 and 4.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with multiple Common-class flares. There are currently eleven regions on the Earth-facing disc. The main region of interest is in the northeast, which has seen some development in its intermediate region but some weakening in its trailer, maintaining a magnetically complex structure. Another spot in the southeast also appears to have complex magnetic structure delta within the main central spot. A new region has rotated around the southeast limb, which is difficult to assess due to foreshortening, but has been the likely source of numerous flares in the past day or so. The remaining spots have shown minor changes and most are small or stable at present.

No Earth-directed coronal mass ejections have been observed.

Solar Wind / Geomagnetic Activity: Solar winds showed a likely connection to a coronal hole high speed stream. Wind speeds were initially slow-ambient before erratically rising to elevated. The Interplanetary Magnetic Field has been mostly moderate. The north-south component was mostly moderately negative. Geomagnetic activity was Unsettled (Kp3) to G1/Minor Storm (Kp5).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is most likely, with a chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: No coronal mass ejections feature in the forecast. Solar winds have once again become elevated due to the likely arrival of CH22/- during the afternoon of 12 Mar. Solar wind speeds are expected to become Strong, around 600 km/s or a little faster, lasting through day 1 into day 2 (13 & 14 Mar) before easing later day 2 or into day 3 (15 Mar). Solar winds should then ease back to slightly elevated levels days 3 and early day 4 (15 and 16 Mar) before once again becoming elevated to strong later day 4 upon the connection to CH23/-.

Geomagnetic activity is expected to be mainly Unsettled to Active with periods of G1/Minor and a chance of G2/Moderate geomagnetic storms through days 1 and 2 (13/14 Mar). Geomagnetic

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activity is expected to become Quiet to Unsettled day 3 and early day 4 (15/16 Mar) before the risk of G1-G2/Minor-Moderate geomagnetic storms returns later day 4.

Energetic Particles / Solar Radiation: The count rate of energetic particles is most likely to remain at background levels.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	60	60	20	60
Strong	**G3**	No	10	10	1	5
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	No	40	45	50	50
Very Active	**R3-R5 (X Class)**	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	10	10
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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